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ABSTRACT

A TOKEN REINFORCEMENT SYSTEM WAS INTRODUCED INTO A SECOND GRADE CLASSROOM, AND SEVEN (OUT OF 21) CLASS MEMBERS AND THE TEACHER WERE OBSERVED FOR 8 MONTHS. EACH OF THE EIGHT PHASES OF THE STUDY LASTED FROM 2 TO 5 WEEKS. THE FIRST FOUR PHASES ESTABLISHED A BASE PERIOD AND DETERMINED THE SEPARATE EFFECTS OF CLASSROOM RULES, HALF HOUR ACADEMIC LESSONS, AND TEACHER PRAISE. IN THE TOKEN I PHASE EACH CHILD IN THE AFTERNOON CLASSES RECEIVED POINTS FOR DESIRABLE BEHAVIOR, WHICH WERE EXCHANGED FOR BACK-UP REINFORCERS INCLUDING COMIC BOOKS AND DOLLS. THE PERCENTAGE OF DISRUPTIVE BEHAVIOR SIGNIFICANTLY DECREASED. TOKENS AND BACK-UP REINFORCERS WERE THEN WITHDRAWN, AND DISRUPTIVE BEHAVIOR INCREASED, BUT NOT SIGNIFICANTLY. TOKENS AND BACK-UP REINFORCERS WERE AGAIN REINSTATED AND WITHDRAWN AND THEN REPLACED BY THE USE OF MORE USUAL CLASSROOM REINFORCERS BY THE TEACHER. AT THIS TIME DISRUPTIVE BEHAVIOR WAS 37% COMPARED TO 53% DURING THE BASE PERIOD. RESULTS INDICATED STUDENT GAINS ON THE CALIFORNIA ACHIEVEMENT TEST, HIGHER CLASS ATTENDANCE, AND THE TEACHER'S INCREASED USE OF PRAISE AND DECREASED USE OF CRITICISM AND THREATS. (DR)

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A Token Reinforcement System in the Public Schools[1]

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Several years ago, Wes Becker and I first utilized a token reinforcement program when we were confronted with a classroom of unruly Negro children. (O'Leary & Becker, 1967). The token program we devised was successful in a number of ways, but most importantly, there was a dramatic reduction of disruptive behavior from an average of 76% in the base period to 10% during the token program. The token reinforcement program we had was in effect for this class for approximately 4 months, and we had planned to continue the slow withdrawal of the token program the following school year. However, due to an integration of the school system in which we were working, we were forced to start anew.

While retrenching from the blow of school integration, we decided to analyze which of the presumed major variables utilized in the earlier (1967) study were of importance. More specifically, we were interested in the separate effects of classroom rules, educational structure, teacher praise, and a token reinforcement program. Very simply, classroom rules consisted of a list of appropriate social behaviors that were reviewed daily. Educational structure involved the organization of an academic program into specified half hour lessons, eg. arithmetic and spelling. The second objective of the present study was to see whether a token program used only in the afternoon had any effect on the

children's behavior in the morning. Third, we wanted to see if we could gradually withdraw the token reinforcement program and transfer control to more usual classroom reinforcers without an increase in disruptive behavior.

There were 21 children in the second grade class with which we were dealing, but since it was impossible to observe all 21 children, 7 members of the class were selected for observation. The seven children were approximately 7 years old with average IQ's. The teacher of the class whom I shall call Mrs. A. had a master's degree in counseling but had no teaching experience. At the beginning of the school year the principal and several teachers mentioned that Mrs. A. was receiving a number of trouble-makers, and consequently we asked her to participate in a research project for which she received four graduate credits.

The 7 children were observed by three undergraduates on Monday, Wednesday, and Friday afternoons for eight months. Four of the 7 selected children were also observed in the mornings on Monday, Wednesday, and Friday. We recorded the frequency of behaviors such as wandering around the room, hitting, kicking, and talking out of turn. Because of slight variations in the general time base of observations for each child, frequencies of disruptive behavior were converted to percentages, and the major dependent measure I will later discuss is an average percentage of disruptive behavior. It should

be emphasized that the behaviors being observed and the observational procedures were identical to those in the 1967 study. Suffice it to say that the behavior classes being observed generally had reliabilities in the 80s.

In order to evaluate the degree to which the teacher was able to follow the experimental instructions, the teacher was observed by two undergraduates two afternoons a week. Two major categories of teacher behaviors were observed: teacher comments preceding a child's response (cues) and teacher comments following a child's response. Examples of teacher comments preceding a child's response were: "Let's sit up," or "Put everything in your desk." Those classes of teacher behavior following a child's behavior were praise, criticism, and threats.

There were eight major phases of this study, and I will now describe each phase of the study and the results of the afternoon data in each of these phases. Each phase of the study lasted from two to five weeks, and we attempted to achieve some stability of the data before moving to any new phase.

1. Base Period The purpose of the base period was simply to obtain an estimate of the frequency of disruptive behavior under usual classroom conditions. The teacher was asked to handle the children as she would normally. During the base period Mrs. A. spent much of her time with small

reading groups in the back of the room while the rest of the class engaged in independent seat work. The average percentage of disruptive behavior for the seven target children was 53% (Figure 1).

2. Classroom Rules During the second phase of the study rules were placed on the blackboard by the teacher. Some examples of these rules were: We sit in our seats, we raise our hands to talk, and we face the front of the room. Mrs. A. was asked to review the rules at least once every morning and once every afternoon. There was no significant effect of listing the rules on the blackboard. The percentage of disruptive behavior during the rules phase was 56 as compared with 53 in the base period (Figure 1).

3. Educational Structure The third phase of the study was called educational structure. It has been stated that a large portion of the success of token reinforcement programs may be a function of the highly structured conditions in the regimen of the program and not a function of reinforcement contingencies. Since the token phase of this program was designed to be used during structured activities which the teacher directed; Mrs. A. was asked to reorganize her afternoon teaching program into four half-hour sessions in which the whole class participated. Mrs. A. continued to review the rules twice a day during this phase and all succeeding phases. There was a nonsignificant drop in the

percentage of disruptive behavior from the rules phase to educational structure. The percentage of disruptive behavior during the educational structure phase was 50. Consequently, the structuring of the academic program by itself did not contribute significantly to the reduction of disruptive behavior.

4. Praise and Ignore The fourth phase of this study called praise and ignore is almost self-explanatory. The teacher was asked to praise appropriate behavior and ignore all disruptive behavior throughout the day. Rules and educational structure continued in effect. Although the increase in disruptive behavior was nonsignificant, there were several days in the praise and ignore phase when the percentage of disruptive behavior was higher than it had ever been (Figure 1). Initially, a number of boys responded well to Mrs. A.'s praise, but under the leadership of several boys, a number of children ran around the room, hid under their desks, and generally stopped their academic work. As I mentioned earlier, we usually waited until some stability of behavior existed, but under reasonable teacher pressure, this phase was discontinued after two weeks. Considering the variability of behavior under this condition, and the necessity for stopping this condition earlier than we wished, I undoubtedly feel that there was a deleterious effect of attempting to praise appropriate behavior and to ignore all disruptive behavior.

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5. Token I The token reinforcement program was instituted in the afternoons as the fifth phase with rules, educational structure, and praise and ignoring in effect. On the first day of the token reinforcement program an experimenter went into the classroom and told the children that they would receive points (ratings) from 1 to 10 four times each afternoon and that the points would reflect the extent to which they followed the rules which had already been placed on the blackboard. If a child were absent he did not receive any points. The points or ratings were placed in small booklets on each child's desk, and the points were exchangeable for back-up reinforcers such as pennants, dolls, and comics.

There were always two levels of prizes, and they were on display each afternoon. To receive a level 1 prize, a child had to receive a certain number of points. To receive level 2 prize, a child had to receive even more points. Whenever the prizes were distributed, all children relinquished their points. During the token period, a child initially had the opportunity to earn a prize every day. Later he had to save his points over a two day period, and finally he had to save over a three day period. During the five week token phase there was an average of 32% disruptive behavior for the seven target children (Figure 1). This percentage of disruptive behavior during the token phase was

significantly different from the percentage of disruptive behavior during the praise and ignore phase. I would like to point out that comparisons between the praise and ignore condition and succeeding phases are most meaningful, since conditions after praise and ignore included rules, educational structure, and praise for appropriate behavior. In short, there was greater similarity between praise and ignore conditions and later phases. After the educational structure phase, the amount of academic instruction greatly increased, and after the praise and ignore phase, the type of teacher control changed markedly.

6. Withdrawal In order to demonstrate that the tokens and back-up reinforcers accounted for the reduction in disruptive behavior, the token and back-up reinforcers were withdrawn. Mrs. A. praised the children for their good behavior in the past and emphasized that she hoped that they would behave as well now that the ratings and prizes were being withdrawn. Rules, classroom structure, and praise and ignoring remained in effect. During the withdrawal phase the disruptive behavior increased but it did not reach the previous level of disruptive behavior that existed during the praise and ignore phase. The percentage of disruptive behavior during the withdrawal phase was significantly different from the percentage of disruptive behavior in the earlier token phase (Figure 1).

The attitude of the teacher toward withdrawal was of special interest. First of all, Mrs. A. did not wish to have the token program withdrawn, because she was afraid that the children would increase their disruptive behavior and that she would be confronted with the same problems she had encountered earlier in the year. One day when we were discussing the possibility of removing the token reinforcement program, she jokingly-and yet partly seriously-told me she would sue us if her class went to pieces. However, when the teacher found that the children did not return to their previous level of disruptive behavior, Mrs. A. did not wish to reinstate the token program. Thus, although there was a statistically significant difference in the percentage of disruptive behavior from the token to withdrawal phase, Mrs. A. was very pleased that the children did not become markedly worse.

7. Token II During the seventh phase the token and back-up reinforcers were again reinstated. The prize and point system was identical to that during the first token phase. Again, the percentage of disruptive behavior decreased significantly (Figure 1).

8. Follow-up During the last phase of the experiment the token and back-up reinforcers were again withdrawn. However, in addition to the use of praise for appropriate behavior, inattention to disruptive behavior, rules, and

educational structure, it was suggested that Mrs. A. initiate the use of a star system. Children could receive stars for good behavior twice during the morning and once during the afternoon. Occasionally, extra stars were given to the best behaved row of children. The children counted their stars at the end of each day, and if they had ten stars, they received a gold star that was placed on a wall chart. If a child received 7 to 9 stars, he received a green star. The boys' gold stars and the girls' gold stars were counted each day, and the group who received the greater number at the end of each week received one piece of candy. In addition, any child who received an entire week of gold stars received one piece of candy.

Obviously the procedures in the follow-up phase could be interpreted as a form of a token program. For example, the stars could be seen as token reinforcers and the piece of candy as a back-up reinforcer. Since we had already seen that the level of disruptive behavior increased somewhat during the withdrawal phase, we wanted to enhance the teacher's control, and thus we instituted the star system. Also we were interested in procedures which could be used by any teacher, and the stars and occasional pieces of candy seemed within the limits of any teacher. The level of disruptive behavior increased somewhat during follow-up to 37%, but it was significantly lower than the level of disruptive behavior during withdrawal (Figure 1).

At this point let me emphsize that is seemed clear to us that the token reinforcement program itself was a significant variable in reducing disruptive behavior in this study as well as the earlier one. Furthermore, we were also able to slowly withdraw a token program in a manner that had not only statistical but pratical significance. In addition, the results that we did get were undoubtedly attenuated by the sequential introduction of the various phases of the program. Nonetheless, several other results deserve mention. There was an average gain of 1.5 years on the California Achievement Test for the class. In addition, there were differences in attendance during the token and non-token phases of the study. Attendance was higher during both token phases than during the base period.

The teacher's behavior changed significantly after she received experimental instructions. When comparisons were made of the teacher's behavior before and after the initiation of the praise phase, it was found that her use of praise increased while her use of criticism and threats decreased. On the other hand, Mrs. A. did not change the frequency of her cueing behavior after the initiation of the praise phase. Consequently, the changes in the children's behavior can probably be attributed to contingencies and not to the increased use of cues.

The morning data collected on the four children from the base phase through the first token phase did not indicate any differences in the disruptive behavior across experimental phases. A closer look at the academic program suggests why "generalization" of appropriate behavior did not occur. First of all, the stimulus conditions were different. The academic program in the morning was not divided into structured activities into which the whole class participated, but rather consisted of small reading groups which the teacher directed while the majority of the class was engaged in independent seat work. The rules were reviewed in the morning, but there was little reinforcement of appropriate behavior of the children engaged in independent seat work since Mrs. A. felt that it would be disruptive to the rest of the class to interrupt her reading groups to praise children doing independent seat work. Thus, the rules specifying appropriate behavior were reviewed in the morning. but the frequency of reinforcement for these behaviors was minimal. Ayllon and Azrin (1964) found that instructions without reinforcement had little effect on the behavior of mental patients. Similarly, we found that rules or instructions without reinforcement did not influence the behavior of the children.

At this kick-off symposium of Applied Behavior Analysis, I would like to reiterate a point made by Baer, Wolf, and

Risley in the first issue of the Journal of Applied Behavior Analysis (1968)--viz. that "generalization should be programmed rather than expected or lamented." Generalization is not a magical process, but a behavioral change which must be engineered like any other behavioral change. We did not make special provisions in this study for obtaining generalization. Although all token reinforcement programs may have some built-in provisions for enhancing generalization by increasing the discriminative and reinforcing power of the teacher and the entire learning experience, such effects seemed minimal in this study. The important variable for achieving generalization of appropriate behavior of children across time and situations is that some reinforcement contingencies be in effect.

One further point concerning reinforcement contingencies is in order. As a result of a token reinforcement study by Kuypers, Becker, and myself (1968) and in an additional study that I just completed, it seems clear to me that direct shaping and reinforcement of a teacher's behavior by a consultant is usually essential in achieving maximal behavioral change. In fact, it is my opinion that if a teacher has had no success in controlling a class for several months, without close monitoring of such a teacher's behavior, many token reinforcement programs are doomed to fail. On the other hand, with proper consultation a token reinforcement

program like the one here described would seem to offer a great deal of promise.

To those interested in an approach that could be applied to a large portion of children with "emotional" or behavioral problems, a token reinforcement program offers an economical and viable treatment approach. The cost of reinforcers and consulting time for the implementation of such a program is indeed small when compared to the hours often spent with children in individual psychotherapy. Futhermore, if token reinforcement programs were combined with individualized programmed instruction, it would be difficult for me to currently envision a more beneficial remedial learning environment for that large group of children who have not learned the value of learning.

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References

Baer, D.M., Wolf, M.M., and Risley, T.R. Some current dimensions of applied behavioral analysis. Journal of Applied Behavior Analysis, 1968, 1, 91-97.

Kuypers, D.S., Becker, W.C., and O'Leary, K.D. How to make a token system fail. Exceptional Children, in press.

O'Leary, K.D. and Becker, W.C. Behavior modification of an adjustment class: A token reinforcement program. Exceptional Children, 1967, 37, 637-642.

Ayllon, T., and Azrin, N.H. Reinforcement and instructions with mental patients. Journal of the Experimental Analysis of Behavior, 1964, 7, 327-331.

Figure Caption

Fig. 1. Average percentage of combined disruptive behavior of seven children during the eight experimental conditions (P.M.)